GLOBAL RISK LANDSCAPE 2022

A Fragmenting World

FOREWORD

By Nigel Burbidge, Partner and the Global Chair of Risk Advisory Services, BDO

The seismic economic shocks of the past two years have led businesses, industries and governments to rethink supply security and, hence, supply chains, placing a bigger focus on resilience over efficiency and low costs. While the COVID-19 pandemic turned entire global supply chains upside down, the geopolitical shocks that will continue to have an impact on supply chains have been creeping up before the upheavals of 2020 and 2021.

Declining relations between a number of the world's largest powers set the stage for ongoing trade tensions that have shown the potential to spill over into supply chains. China's zero-COVID strategy, which continues to shut down many of the country's ports and manufacturing facilities, creates a challenging business environment, especially for companies that have invested heavily in transferring manufacturing capabilities to the Far East. For years, China offered efficient, low-cost supply chains, but events of the past two years exposed the problems caused by heavy reliance on one manufacturing and distribution base.

The effects of the pandemic caused wholesale re-evaluations of supply chains – the measures many businesses have taken should stand them in good stead as further challenges emerge, such as the disruption caused by Russia's invasion of Ukraine, sanctions against Russia, and shortages caused by Ukrainian farmers being unable to produce and export grain that the world has come to rely on.

> *"There are no simple solutions for weathering ongoing and forthcoming supply chain storms… (but) the case for resilient supply chains is stronger than ever"*
>
> NIGEL BURBIDGE, PARTNER AND THE GLOBAL CHAIR OF RISK ADVISORY SERVICES, BDO

Localisation for shorter supply chains, running multiple smaller manufacturing plants rather than one large site, and using more than one supplier are three major steps that can be taken to boost resilience. However, taking these measures can be expensive, which increases costs along the supply chain and for consumers – and ultimately drives up inflation.

There are no simple solutions for weathering ongoing and forthcoming supply chain storms. As uncertainty is set to continue on an international scale and businesses need to prioritise sustainability and environmental stewardship issues, the case for resilient supply chains is stronger than ever.

52%

of respondents agreed that the risks of large complex global supply chains now outweigh the benefits that they bring

EXECUTIVE SUMMARY

The unprecedented supply chain disruption caused by the COVID-19 pandemic may be subsiding, but new challenges require companies to build on the measures already taken to ensure resilience and sustainability

COVID-19 disrupted supply chains on a global scale, the likes of which businesses, governments and industries had not previously seen. More than two years on from the first pandemic lockdowns, businesses continue to experience supply chain challenges. Our Global Risk survey reveals almost half of C-Suite respondents said their supply chains have been severely affected by disruption over the last 18 months.

While international borders and economies have reopened, China's zero-COVID strategy continues to contribute to delays and shortages as the Government continues to impose lockdowns. Our report will outline other geopolitical factors that continue to create issues, forcing companies to find alternative suppliers and transportation routes – it is clearly a major concern among businesses with 77 percent of survey respondents citing geopolitical risk as a significant priority or the highest priority risk for their business. Russia's War in Ukraine and the resulting sanctions have stopped essential goods and produce from leaving Ukraine while isolating Russia from vast swathes of global trade, while threats of a US-China trade war also pose risks to supply chains.

As well as geopolitical headwinds, our report examines other factors that continue to cause supply chain disruption and investigates whether businesses are prepared for ongoing and future challenges. Our survey found that businesses consider transparency as the second-biggest threat to supply chains (75 percent) and the third-biggest risk is cyber attacks on supply chains at 72 percent.

However, our survey revealed that discrepancies exist between the concerns businesses have and the practical steps they are taking to really build supply chain resilience.

Almost half of C-Suite respondents said their supply chains have been severely impacted by disruption over the last 18 months

"Discrepancies exist between the concerns businesses have and the practical steps they are taking to really build supply chain resilience"

Regional differences in preparedness for supply chain disruption also emerged when survey respondents were asked about developing digital expertise and investing in digital transformation. Despite real and widespread fears about cyber attacks, hiring digital talent and investing in supply chain technology is a significantly higher priority in the Middle East and the Americas.

Our report outlines strategies businesses can take to build resilience into supply chains. Many businesses worldwide have already taken steps such as moving away from low-inventory, just-in-time supply chains, increasing localisation, and introducing joint procurement strategies.

Greater investment in digital transformation is another important step businesses can take to improve supply chain transparency and better predict disruptions so timely decisions can be made to mitigate risks. Artificial intelligence solutions that use predictive analytics will play a growing role in improving supply chain resilience and efficiency. At the same time, businesses will have to prioritise cyber security to ensure malicious attacks on supply chain systems do not derail the movement of goods.

Ultimately, however, the risk of serious disruption to supply chains from extreme climate events and natural disasters is the one that could create challenges of an equal or greater magnitude than those caused by the COVID-19 pandemic. Integrating climate and weather forecasting into predictive analytics solutions is one major step that can be taken to be better prepared for the disruption that many leading supply chain experts and climate scientists are expecting. Our report offers a powerful call to action for businesses across the world to take this threat seriously, build resilience and transparency into supply chains and cooperate with all stakeholders.

Impact of Russia's War in Ukraine in Supply Chains

56%
Our supply chain partners have been disrupted by sanctions

45%
Our logistics and shipping networks have been disrupted by the conflict

35%
Our energy costs have risen as a result of the conflict

23%
Our supply chain partners have been disrupted by the conflict

Fifty-nine percent of survey respondents have created alternative supply chains as a backup and 23 percent intend to do so, but there are other areas where businesses may not be as ready to weather current or future storms. For example, none of the survey respondents who described their supply chain risk management as "under-resourced" felt they had a full understanding of the location or threats faced by their Tier 1 suppliers, indicating serious issues with transparency for many businesses.

Another area where many businesses may be leaving themselves vulnerable to supply chain threats can be found in the status given to risk leaders within companies. Our survey found significant regional differences in this regard. While an overwhelming majority of survey respondents in the Middle East and the Americas said that a risk management leader was a C-suite position in their companies – 72 percent and 80 percent respectively – this was much lower in other regions. The third highest percentage was Europe at 44 percent.

CONTENTS AND KEY HIGHLIGHTS

THE PERFECT STORM

Overlapping factors – including geopolitical tensions, regulatory pressures, skills shortages and climate change – now present major threats to supply chain operations

Global supply chains have experienced ongoing and unprecedented disruption since 2020. The challenges presented by a "perfect storm" of multiple factors have forced businesses across the world to reassess how products are moved around on a regional, national and international level.

As lockdowns were imposed across the world in 2020 to mitigate the spread of COVID-19, shockwaves were sent across global supply chains. In particular, the pandemic-related disruption exposed the heavy reliance on China's manufacturing and logistics sectors for many businesses. Even though economies around the world are reopening, reliance on China continues to present supply chain issues, as the country continues with a zero-COVID strategy.

"The pandemic disrupted the global supply chain – Asia and parts of Europe were initially hit hard with workers who fell sick with COVID, as well as shut down factories or factories at partial production and lockdowns," said Vicky Gregorcyk, National Practice Leader – Risk Advisory Services – BDO US. "Once the factories were not fulfilling supply, the transportation piece of the supply chain also began to falter. Many companies did not have a plan in place when their primary sources of supply were cut off or delayed."

Business leader and author Kevin Gaskell, sums up the major causes of the disruption: "There are many factors at play including the political impact of the US-China trade war, the global economic impact of COVID-induced reductions in manufacturing volume, and the practical implications of vehicle and vessels being in the wrong place at the wrong time."

Supply chain transparency was affected during the pandemic when businesses scrambled to find alternative partners amid lockdowns and labour shortages. It remains a serious challenge for businesses worldwide, indicating widespread awareness of the importance of visibility along entire supply chains, particularly when multiple partners and countries are involved. The MIT Sloan Management Review reported that a major reason for increased concern about supply chain transparency is consumer pressure for demonstrably better environmental and social practices, especially in the clothing, consumer electronics, and food and beverage sectors.

Geopolitical tensions was a ranked as the top priority risk

01 Geopolitical tensions

02 Supply chain transparency

03 Cyber attacks on supply chains

04 Transport and distribution bottlenecks

05 Raw material shortages

"Once the factories were not fulfilling supply, the transportation piece of the supply chain also began to falter. Many companies did not have a plan in place for this"

VICKY GREGORCYK,
NATIONAL PRACTICE LEADER –
RISK ADVISORY SERVICES, BDO US

The fear of cyberattacks on supply chains is justified, according to data from IBM's annual X-Force Threat Intelligence Index for 2022. IBM found that manufacturing was the most heavily targeted industry for cyberattacks in 2021 at 23 percent, taking over from financial services and insurance. Ransomware attacks on manufacturers create "ripple effects" that affect the supply chains of manufacturers, IBM reported, adding that 47 percent of attacks on manufacturers were caused by "vulnerabilities that victim organisations had not yet or could not patch".

Transport and distribution bottlenecks and raw material shortages were brought into sharp focus during the pandemic, with increased awareness of how easily supply chains can be disrupted. In an increasingly uncertain world, even with pandemic pressures easing across many markets, the impetus has been created for serious evaluation of supply chains to prevent future chaos.

Factors that affect supply chains as well as other business operations – including geopolitical tensions (77 percent), regional conflict (47 percent), tougher environmental regulations (44 percent), lack of digital expertise (33 percent), and climate change and natural disasters (22 percent) – are challenging businesses to varying degrees, our survey found.

Overall, this paints a complex picture of overlapping supply chain challenges, some of which are hard to control, such as regional conflicts and natural disasters, along with factors where businesses can take more direct control, such as a lack of digital expertise.

During the past 18 months, the need for greater resilience and flexibility in global supply chains has come to the fore, particularly with the COVID-19 pandemic causing unprecedented disruption. But has this translated into businesses making changes to supply chains so that future events do not create similar challenges?

According to our survey, the most popular step to take has been creating full alternative supply chains as a backup to existing systems at 59 percent, closely followed by the introduction of dual sourcing of raw materials (54 percent), and regionalising supply chains or nearshoring production (50 percent).

Other measures taken by businesses to prevent a repeat of such serious disruption include introducing supply chain analytics technology (40 percent), increasing inventories for critical components (37 percent), and hiring more digital talent (30 percent). Interestingly, this indicates that 60 percent of survey respondents have not introduced supply chain analytics technology and 70 percent are not hiring more digital talent, despite 75 percent citing supply chain transparency as a major priority.

Looking towards the longer term, the survey respondents were asked how they expected supply chain optimisation to change in the next five years, a particularly crucial question given that uncertainties, such as the conflict between Russia and Ukraine, natural disasters and the impact of climate change, are difficult to forecast accurately.

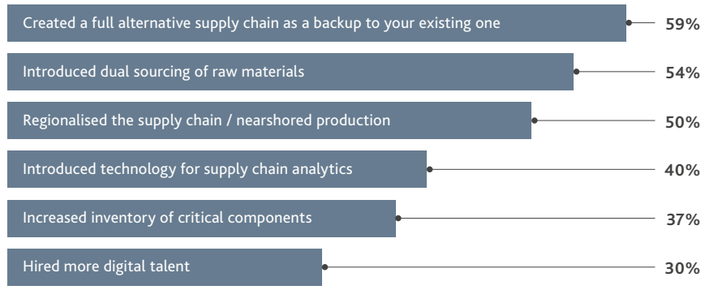
In particular, business leaders were asked if they expected supply chains to be optimised based on efficiency or resilience in the next five years. The results revealed interesting variations between different regions.

Overall, the expectation is that resilience will be a stronger focus than efficiency for supply chain managers, indicating how serious the impact of pandemic-related disruption was for many businesses. Every region we surveyed – Europe, Middle East, Africa, Asia-Pacific and the Americas – favoured a resilience focus, albeit to varying degrees. Respondents from the Americas proved to be the most committed to improving resilience at 92 percent, closely followed by the Middle East at 89 percent. For the other regions surveyed, resilience is still a major priority at 68 per cent for Europe, 60 percent for Asia-Pacific and 52 percent for Africa.

Supply chain efficiency is a much lower priority across all the regions, with African business leaders ranking it the highest at 33 percent, followed by Asia-Pacific (30 percent), Europe (24 percent), Middle East (10 percent) and the Americas (6 percent).

Decoupling from existing supplier relationships – particularly when long distances and multiple regions or countries are involved – is a growing trend among many businesses and industry sectors. This has the twin benefit of improving resilience and efficiency, if businesses take practical steps to achieve it – 59 percent of survey respondents have developed alternative supply chains, indicating decoupling is being taken seriously.

Companies have taken a variety of steps to make their supply chains more resilient

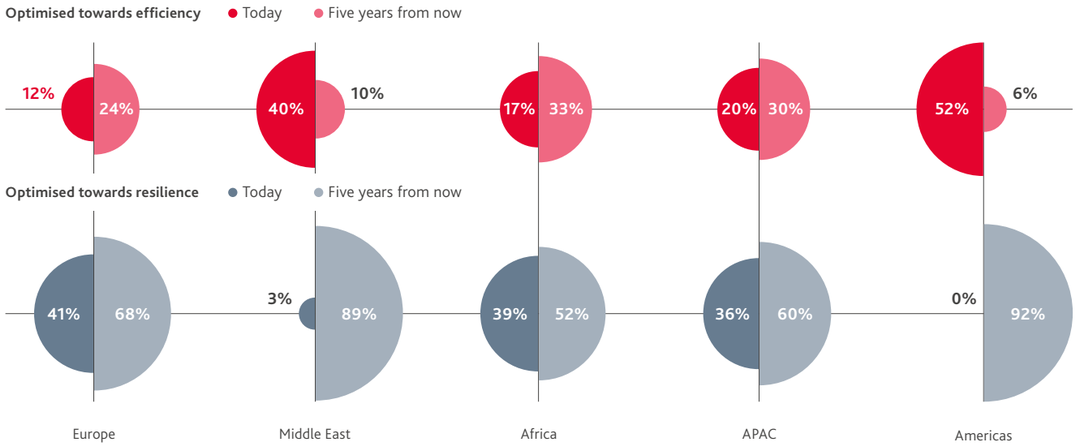


For businesses that relied heavily on China, decoupling has become a way to safeguard businesses as Beijing continues to enforce a zero-COVID policy, either by finding alternatives to Chinese suppliers or implementing a so-called China-plus-one strategy when completely eliminating China from the supply chain is impractical.

Kevin Gaskill says that businesses are "typically very agile" when responding to supply chain challenges, such as the need to decouple from existing suppliers: "They will build a bigger safety stock buffer, identify new and alternative routes for suppliers, and find alternative channels to market."

Emanuel van Zandvoort, Partner – BDO Netherlands, cautioned about the negative effects of being unprepared for future supply chain shocks, at a company level and in broader terms: "No supply means no sales, decreasing margins and loss of market share – and the social impact can be huge, the gap between rich and poor will increase."

While the Middle East & Americas were most likely to have supply chains optimised towards efficiency. All regions expected a significant shift to optimise towards resilience over the next 5 years



GEOPOLITICAL QUICKSAND FOR SUPPLY CHAINS

Russia's War in Ukraine and trade tensions between the US and China are creating obstacles for supply chains on a regional and international scale

The major geopolitical risks currently affecting supply chains include growing tensions among Europe, the US and Russia, ongoing US-China trade headwinds, tariffs, and Russia's War in Ukraine. The latter has led to Russia's economic isolation as international sanctions take effect, as well as highlighting the political implications of European reliance on Russian oil and gas. For the UK, the vote to leave the European Union and the trade barriers this has created is an additional geopolitical pressure. These factors exist against a backdrop of increasingly stringent requirements of technology transfer and a growth in nationalism and protectionism.

59%

of respondents had created an alternate supply chain as a backup over the last 18 months, to make their supply chain more resilient

A further

23%

intend to do this over the next 18 months

55%

of respondents had found alternate suppliers to help mitigate supply side risk stemming from the Russia's War in Ukraine

Enric Doménech, Partner, Head of Risk Advisory Services, BDO Spain, said the geopolitical and commercial tensions with China began before the pandemic, creating stress on supply chains that was exacerbated by lockdowns. This was especially prevalent for factories that make raw materials and components that need to be transported internationally, which then exposed the lack of preparedness in other continents, such as Europe, when it came to managing risk.

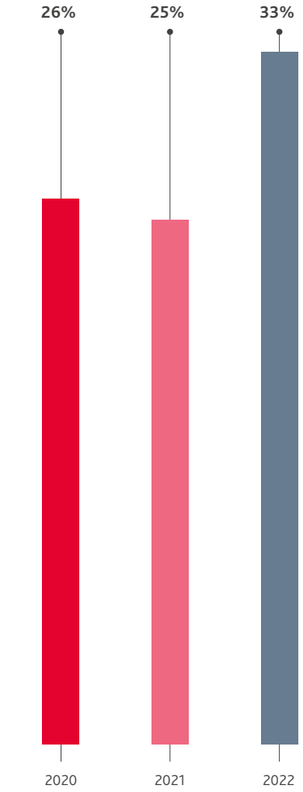
"Geopolitical tensions will continue to exist in the coming years and we have already seen these tensions rapidly spill over into supply chains and, ultimately, product costs, which are increasing at speed" said Doménech. "It is very difficult for companies to react – or they are not prepared – and this is one of the current risks for businesses."

In 2022, feelings of unpreparedness for managing geopolitical risk have increased since 2020 and 2021, perhaps a reflection of the impact of Russia's War in Ukraine on supply chains.

Developing alternative supply chains as a buffer against these tensions has become increasingly important. Growing nationalism and protectionism – along with consumer pressure for greener, low-mileage supply chains – creates a favourable political and social climate for localising supply chains.

Russia's War has resulted in 55 percent of respondents finding alternate suppliers to mitigate this risk. Survey respondents in the Middle East and the Americas have the most partners in Ukraine at 72 percent and 73 percent respectively. Overall, 24 percent of respondents have operations in Ukraine, 33 percent have partners in Ukraine, 21 percent have suppliers

More C-Suite say they are unprepared for the risks stemming from Geopolitical tensions than ever before



in Ukraine, and 45 percent have reported logistics and shipping disruptions as a result of the conflict. In the context of those figures, it is clear that ongoing conflict will mean alternative sources of supply and supply chains will likely be in place for the foreseeable future.

As well as finding alternate supply chains, other measures the survey respondents are taking to mitigate the effects of the War in Ukraine include ramping up cyber security (51 percent) and increasing inventory (57 percent).

Sanctions imposed against Russia have had the biggest impact on the Middle East and the Americas, with both regions the most likely to experience supply chain disruption as a result. Overall, 56 percent of respondents reported supply chain partners experiencing disruption because of sanctions and 23 percent reported partners being disrupted by the conflict itself. At the other end of the scale, African businesses are the least affected by the conflict, with 25 percent reporting no impact whatsoever on supply chains or energy costs.

However, not all survey respondents are cutting all ties with Russia – 39 percent have severed ties with some Russian partners and suppliers and only 2 percent have severed all ties with Russia, all of which were in the Middle East and the Americas. A heavy reliance on Russian oil and natural gas is a challenge for regions, especially Europe, where leaders are keen to impose sanctions, but fears of energy price rises and shortages create political and economic challenges.

Higher revenues appear to make it easier for organisations to sever ties with Russia while its War in Ukraine continues. Our survey found that 60 percent of organisations with revenues of $10 billion or more had done so.

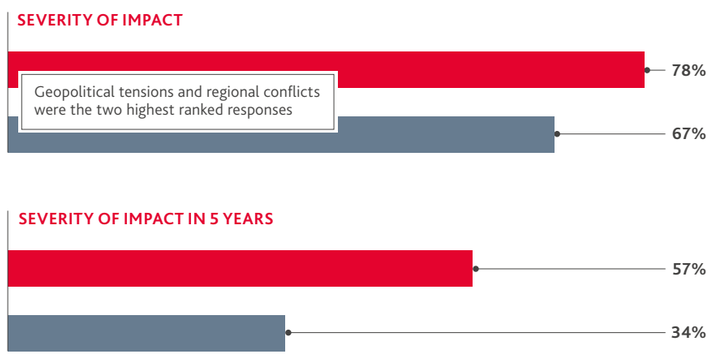
Tensions between the US and China, with added pressures of China's strict adherence to a zero-COVID strategy, has created serious supply chain challenges on an international scale. The superpowers of the US and China represent the world's biggest economies, with the US at number one with a GDP of $20.89 trillion, followed by China at $14.72 trillion, according to World Bank data.

Laurence Dellicott, Director of Supplier Management & Supply Chain Services at logistics technology firm MySupply, explained that threats of a full-blown US-China trade war have caused manufacturers to stockpile components ahead of embargos. At the height of the pandemic, demand for consumer electronics increased and Dellicott said "these problems are still impacting the supply chain, especially in relation to the stress on electronics".

Dellicott added that regardless of how well other countries manage supply chains as economies have reopened after pandemic-related lockdowns, "it's not dramatic to say that if China struggles too much with the variant throughout 2022, there will be significant global supply chain impacts."

Ruediger Hagedorn, Director of The Consumer Goods Forum, advises businesses to take a range of measures to protect them against the impact of geopolitical events on supply chains, especially when other factors, such as consumer demand increase the pressure. These measures include building more flexibility within supply chains "to give more room for manoeuvre if the unexpected happens", as well as storage of essential products closer to home, shipping from geographically closer neighbours, reviewing warehousing to ensure reliable storage facilities, and closer collaboration with supply chain partners to secure longer-term benefits for everyone involved.

The C-suite feels Geopolitical Tensions & Regional conflicts pose the most severe threat to supply chains right now



SAMSUNG'S TIGHTROPE

In 2011, Japan was rocked by an earthquake and tsunami. The Fukushima nuclear accident dominated headlines, but this natural disaster had wider implications. For South Korean technology giant Samsung, the aftermath of the earthquake and tsunami led to increased investment in domestic production capabilities to limit exposure to natural and climate disaster supply chain risks. However, minimising risk exposure to natural disasters was not the only supply chain concern Samsung has managed since 2011. More than 80 percent of Samsung's revenue comes from overseas markets, making the company highly susceptible to global circumstances.

80%

of Samsung's revenue comes from overseas markets

Samsung balances competing relationships with the US and China, two vital trading partners for South Korea. To achieve this, the company has made major investments with Chinese partners and in US-based infrastructure for producing semiconductors. The value of the semiconductor market cannot be overstated – these solutions led Samsung's 2022 first quarter profits with a 151.5 percent increase in operating profit to 8.5 trillion won year-on-year.

Cooperation with governments is another important strategy for alleviating supply chain issues. In October 2021, Samsung Electronics North America President and Chief Executive Officer KS Choi met with Vice President Kamala Harris, Transportation Secretary Pete Buttigieg, National Economic Council Director Brian Deese, and CEOs of other major companies to discuss practical ways to alleviate a pandemic-related shipping bottleneck at two Californian ports. This resulted in an increase of almost 60 percent in the number of containers that were moved in a 90-day period.

Looking ahead, Samsung plans to build a $17 billion plant in Taylor, Texas, to make advanced chips for its contract-manufacturing business. Protecting US market share is crucial – 72 percent of US homes have one or more Samsung products. In addition, Samsung is looking to Vietnam as an alternative supplier, so the company has a buffer against supply chain issues that could be created by trade war-related tensions between the US and China.

The practical lessons business leaders can take from Samsung's example include localising manufacturing and supply chains for important markets, such as investment in US infrastructure. As well as providing a buffer against geopolitical events that affect cross-border supply chains, localised supply chains are more sustainable with a lower carbon footprint as goods and components travel fewer miles.

For businesses with a heavy reliance on China for manufacturing and logistics, Samsung demonstrates that as well as forming solid partnerships within China, it is important to work with other countries. Using Vietnam as an alternative supplier will help shield Samsung from issues created by US-China tensions and China's zero-COVID strategy.

Samsung also demonstrates the benefits of maintaining good relations with governments in their markets. Having a seat at the table with political leaders when supply chain issues are caused by external factors creates powerful cooperation with bottom line benefits.

TRANSPARENCY IN AN OPAQUE WORLD

How technology can be safely leveraged to improve supply chain transparency, in an era where visibility is more important than ever before

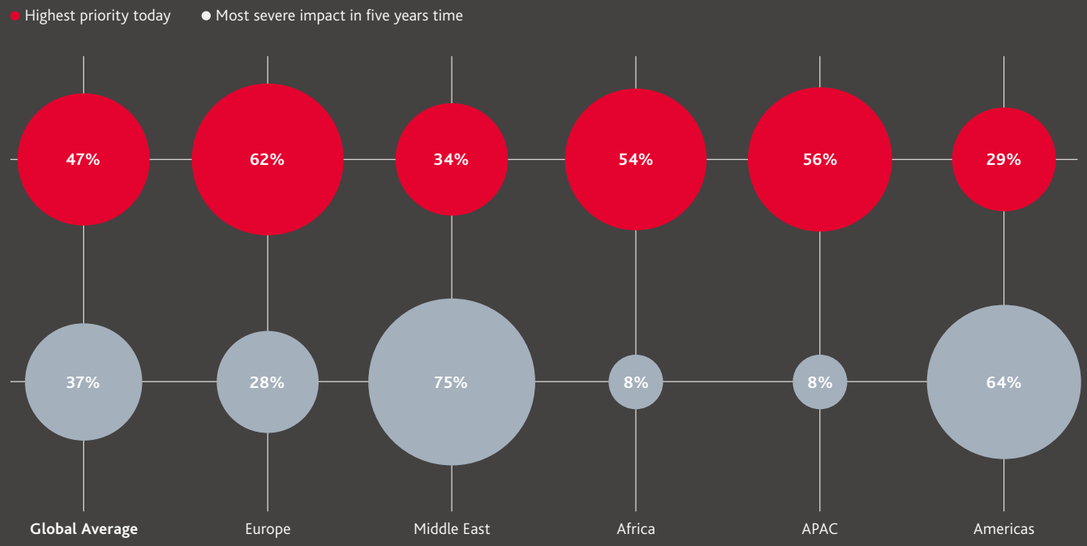
Our 2022 Global Risk survey has revealed that, on average, 47 percent of respondents ranked supply chain transparency among their organisations' highest risk priorities. However, our survey revealed gaps between the concerns of businesses, understanding of the key threats caused by poor transparency, and actions taken to alleviate these issues, along with significant regional variations.

There are two main risks caused by poor supply chain transparency. First, there is a growing reputational risk for businesses associated with suppliers that do not meet the high ethical standards more consumers are demanding, and the second risk is knock-on effects when businesses do not understand regional challenges faced by suppliers. If businesses are not fully aware of these challenges, additional risk exposure is a real possibility.

Studies have shown that more consumers demand high ethical standards along supply chains from the brands they use. IQPC's Global State of Customer Experience Report 2022 found that 80 percent of customer experience professionals surveyed said there was "rising sustainability awareness" from consumers, and just over 80 percent said awareness of company ethics is influencing purchasing decisions. This includes environmental stewardship, no child or unpaid labour, good working conditions, using sustainable materials, and the highest safety standards.

Rising concern among consumers regarding supply chain ethics interconnects with the second risk, that of businesses not fully understanding suppliers' regional challenges – and improved transparency at every level of the supply chain helps minimise these risks. For businesses, the risks are not only reputational, but can have financial implications. When a business is unable to gather the right data at every step and in every region, it is difficult to find solutions to deal with issues that cost money and waste valuable time. This is why supply chain visibility is crucial at every tier.

Supply chain transparency priority and impact



75%

of the C-Suite ranked supply chain transparency amongst their companies highest priorities. The second highest priority of any risk

28%

said they're investments in supply chain technology were made to increase visibility & transparency

Richard Walker, Director, BDO South Africa, emphasised the importance of prioritising sustainability when mitigating risk: "Companies should ensure that there is an integrated approach to supply chain risk management and supply chain resilience. An integrated approach can only be achieved if supply chain, as part of sustainability, is at the centre of a company's business model."

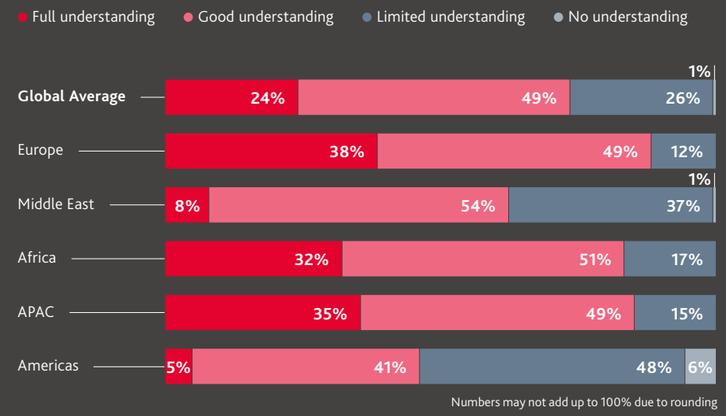
Leveraging data is essential to improve transparency and visibility. For accessing data in real time, so smart, fast decisions can be made, investment in technology has become a "need-to-have" rather than a "nice-to-have". Twenty-eight percent of survey respondents said they had introduced technology for supply chain transparency and visibility, which was the second-highest answer after supply chain planning. However, this indicates that 72 percent of respondents are yet to make this investment.

Leading edge technological solutions for improved transparency make the most of advances in artificial intelligence and machine learning. This technology not only ensures data about supply chain challenges, such as delays and shortages, is readily available to everyone who needs to be aware, but it processes and analyses data to aid decision-making. Cloud-based solutions mean that people across different regions and countries can see supply chain activity in real time, while balancing cybersecurity concerns regarding who has access to the information.

Dr Shereen Nassar, Global Director of Logistics Studies, Heriot-Watt University Dubai, says transparency is "not limited to only knowing the location of the inventory while on its journey from manufacturer to supplier to shipping company through to end user. It is about having access to and leveraging real-time data from every point of the journey."

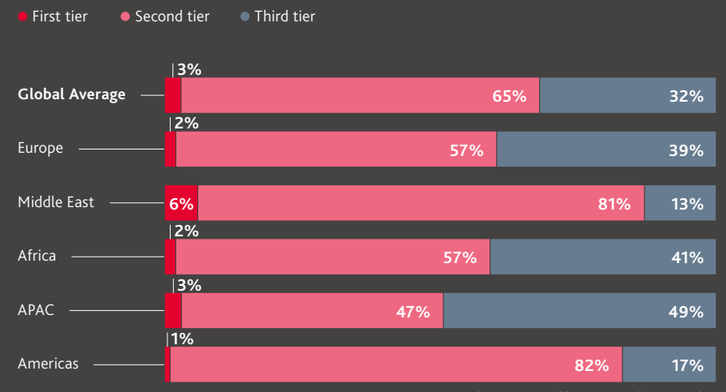
She sums up the importance of technology for businesses that are serious about supply chain transparency: "[The priorities are] identifying inefficiencies, ensuring quality compliance of products, enhancing the ability to monitor suppliers, and positively impact stakeholder and customer satisfaction. Technologies such as AI-powered tools and blockchain technology provide enhanced product visibility and traceability, conferring trust and eliminating disputes in many cases."

Supply chain key threats understanding



Numbers may not add up to 100% due to rounding

Does your company have any visibility in their supply chain beyond the first tier?



Numbers may not add up to 100% due to rounding

RISK LEADERS IN THE C-SUITE, PART I

The corporate status of risk leaders in an organisation can have a direct impact on how risk management is prioritised in supply chains

The prominence of a risk management leader within the corporate structure of a business tends to reflect how risk-averse – or risk-tolerant – the company might be. The risks associated with managing supply chains in an increasingly unpredictable world are presenting new challenges to businesses, so our latest global risk research investigated the connection between the corporate status of risk officers, the appetite for risk, and supply chain priorities and plans.

Survey respondents from companies where the risk lead is a C-suite position were found to be considerably less risk-welcoming. According to the data, these organisations are two-and-a-half times more likely to cut ties with Russian partners in response their War in Ukraine, and are 18 percent more likely to have a team member whose role is dedicated specifically to supply chain risk.

Of the organisations that do not have a risk lead in a C-suite position, 29 percent have never considered elevating a risk lead to a position such as head of internal audit, chief risk officer or director of risk and assurance, and consider themselves risk-welcoming.

Our research found a connection between the level of resources dedicated to supply chain risk management and supply chain visibility, which risks are prioritised within those organisations, and views on the future

2.5x

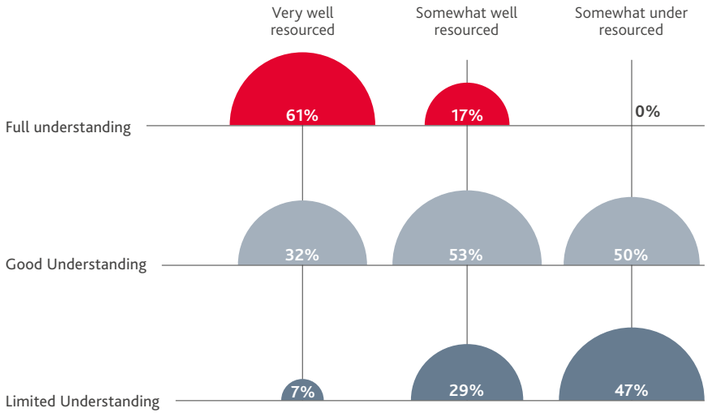
more likely to cut all ties with Russian partners than those who haven't considered making it a C-Suite role.

24%

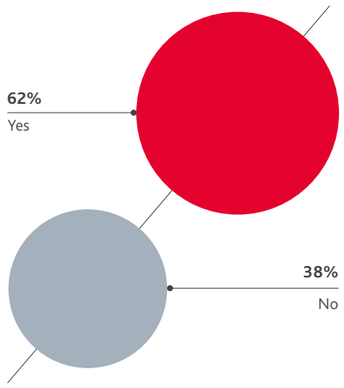
more likely to cut some ties with Russian partners or suppliers

Is your risk lead a C-suite position

To what extent does your company understand the locations and key threats faced by your tier one suppliers?



Does your company have a dedicated individual responsible for supply chain risk management?



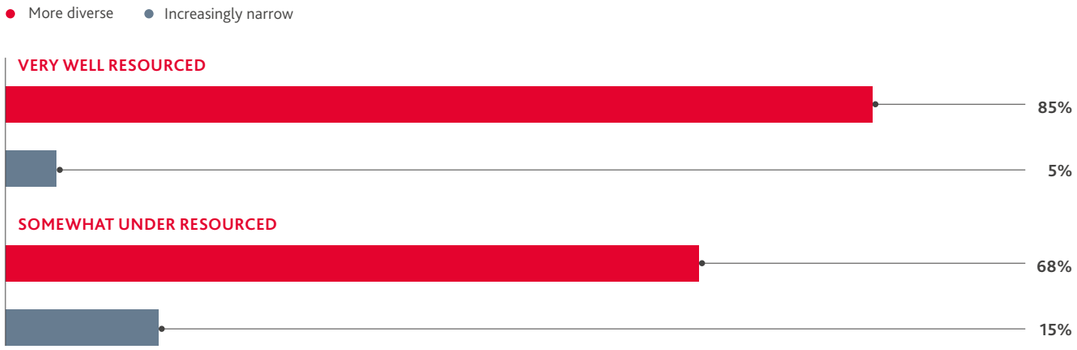
"None of the under-resourced respondents felt they had a full understanding of location and threats faced by their Tier 1 suppliers"

direction of travel for supply chains. Of the respondents with well-resourced supply chain risk management, only 5 percent ranked cyber-attacks as the number one priority for their business. In contrast, 38 percent of respondents with under-resourced supply chain risk management ranked cyber-attacks as the top priority. In addition, none of the under-resourced respondents felt they had a full understanding of location and threats faced by their Tier 1 suppliers.

Our survey data certainly poses some challenging questions for companies with under-resourced supply chain management to consider, such as whether the time is right to promote a risk officer to C-suite position and whether more investment is needed into supply chain risk management.

Dr Shereen Nassar, Global Director of Logistics Studies, Heriot-Watt University Dubai, cited the example of the pharmaceutical companies, which tend to have complex and sensitive supply chains, as an industry where others can learn lessons for improved supply chain investment and prioritisation of risk managers in C-suite positions. She said the wide-ranging benefits include "investing in technologies that provide transparency, traceability and visibility to using it to support sustainability goals."

On average is your business headed toward a more diverse, or an increasingly narrow supply chain, over the next 18 months?



RISK LEADERS IN THE C-SUITE, PART II: TWO REGIONS ALIGN

The Middle East and the Americas are, by a significant margin, the regions most likely to promote risk leaders to C-suite roles – but what impact does this have on supply chain management?

The prioritisation of supply chain management and the prominence within organisations of risk leads, is markedly higher in the Middle East and the Americas, according to our survey data.

Among survey respondents from the Middle East, 72 percent reported that a risk management leader is a C-suite position in their organisation. In the Americas, this figure was even higher at 80 percent. In contrast, the third-highest percentage was Europe at 44 percent.

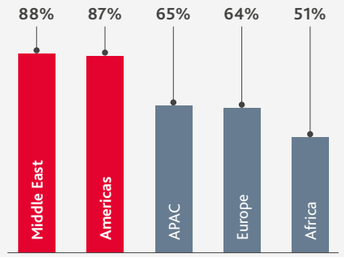
Again, the Middle East and the Americas were in lockstep with each other when asked if their organisations have a position dedicated specifically to supply chain risk management – this figure was at 87 percent for the Middle East and 94 percent in the Americas, with Europe in third position at 50 percent.

Drilling down further into the data, the majority of respondents from the Middle East and the Americas consider themselves to be risk-welcoming at 81 percent and 84 percent respectively. Once more, there was a significant gap between the top two and the third-highest percentage, with 52 percent of respondents from Asia-Pacific considering themselves to be risk-welcoming.

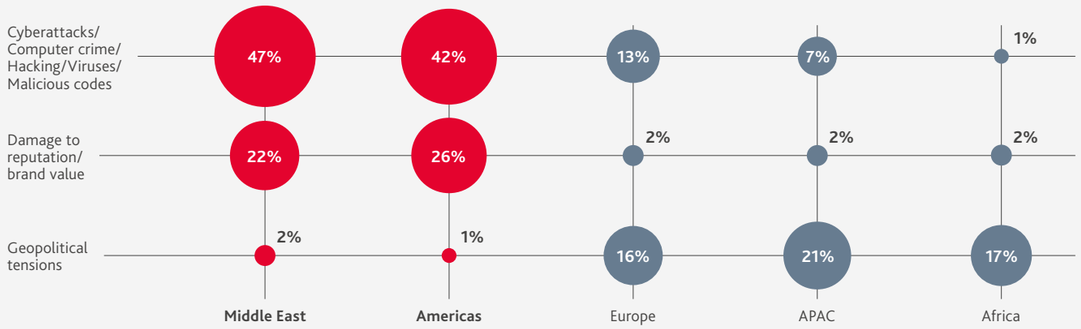
The proliferation of risk officers in the Middle East and the Americas may help explain the confidence of so many respondents from these regions to consider themselves risk-welcoming. More than 75 percent of respondents from both regions said their organisations planned to further diversify supply chains over the next 18 months and, overall, they strongly agree that the risks of more globalised supply chains outweigh the benefits. In addition, organisations in the Middle East and the Americas led the way among survey respondents in creating full alternative supply chains to improve resilience. The Middle East also led all regions in moving towards more regionalised supply chains at just above 60 percent. These figures indicate major plans are in place across multiple businesses to manage risks associated with geopolitical tensions, with diversification meaning greater localisation for these regions' supply chains.

Leveraging supply chain technology to improve resilience and flexibility was a high priority for the Middle East and the Americas, ahead of other regions. For the Middle East, almost 60 percent of organisations in the Middle East are hiring more digital talent and just over 40 percent are investing in supply chain analytics technology. In the Americas, more than 50 percent are investing in this technology and almost 50 percent are hiring more digital talent.

Businesses in The Middle East and the Americas expect far greater supply chain diversification over the next 18 months than other regions



Which risks are your company most unprepared for?



CYBER ASSAULT ON SUPPLY CHAINS

Cyber security is a growing concern for business leaders worldwide, a challenge that requires digital expertise and investment in leading edge technologies

Digital transformation has a powerful impact across industries and industry sectors – and supply chains are no exception. Technology has improved the transparency, resilience and efficiency of supply chains, but digitisation of supply chains comes with the significant risk of attack by increasingly sophisticated hackers and cyber criminals.

The risks are complex and wide-ranging, including crimes such as nation state hacking of strategic industries and cyber-criminals using ransomware to shut down business operations. But Internet of Things (IoT) technology for supply chains is here to stay, so cyber-security risks must be mitigated.

Our survey revealed more businesses expressing concern about the risk of cyber-attacks, with 22 percent of respondents ranking it as the number one priority for their business, the highest score of any risk. This represents a sharp rise, compared with 12 percent ranking it as their highest priority in 2020 and 9 percent in 2021.

Many businesses made it clear in our survey that the risk of cyber-attacks will continue to pose challenges in the years ahead, ranking as the second highest challenge on average in terms of the risk it presents to supply chains in five years' time. Forty-five percent of respondents said cyber-attacks would pose a severe or somewhat severe impact.

It is clear that businesses need to boost preparedness for cyber-attacks and remain resilient in the face of this ongoing challenge, so they can benefit from the increased transparency and efficiency while staying safe.

The US-based National Institute of Standards and Technology advises organisations to develop defences against cyber-attacks "based on the principles that your systems will be breached". Starting the process from the premises that a breach is inevitable means the question "becomes not just how to prevent a breach, but how to mitigate an attacker's ability to exploit the information they have accessed and how to recover from the breach".

The UK Government's National Cyber Security Centre recommends continuous improvement within digital supply chains. This involves constant vigilance, with the centre advising organisations to "encourage your suppliers to continue improving their security arrangements, emphasising how this might enable them to compete for and win future contracts" and to act quickly whenever concerns are raised.

> *"The question is not just how to prevent a breach, but how to mitigate an attacker's ability to exploit the information they have accessed and how to recover from the breach"*
>
> US-BASED NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

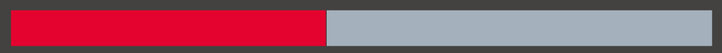
Last year, the European Union Agency for Cybersecurity (ENISA) released the Threat Landscape for Supply Chains report, which offers practical advice to prevent these attacks. The report found that in 66 percent of reported breaches, attackers focused on suppliers' code, and concluded that organisations should "focus their efforts on validating third-party code and software before using them" to ensure there has been no tampering or manipulation.

ENISA also found that of the supply chain incidents it analysed, 58 percent involved targeting customer data, such as personally identifiable information and intellectual property. This points to the importance of not forgetting the protection of customer data and following all relevant data protection regulations when improving digital supply chain security.

The New Zealand government's Communications Security Bureau recommends a clear definition of roles and responsibilities within a cyber risk management programme. Instead of treating supply chain cyber-security as an isolated process within a specific team or unit, the bureau recommends integrating supply chain risk management, including cyber-security, within a broader organisational programme.

On a scale of 1-5 rank each risk by the severity of the impact you think it will pose to your company in 5 years time.

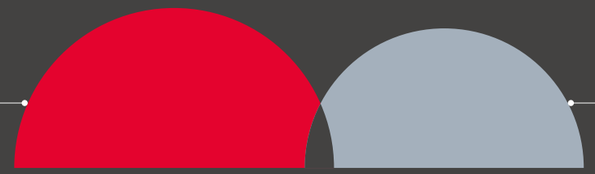
45%



Cyber attacks on supply chains ranked second highest on average when considering impact it will pose in 5 years time

67%

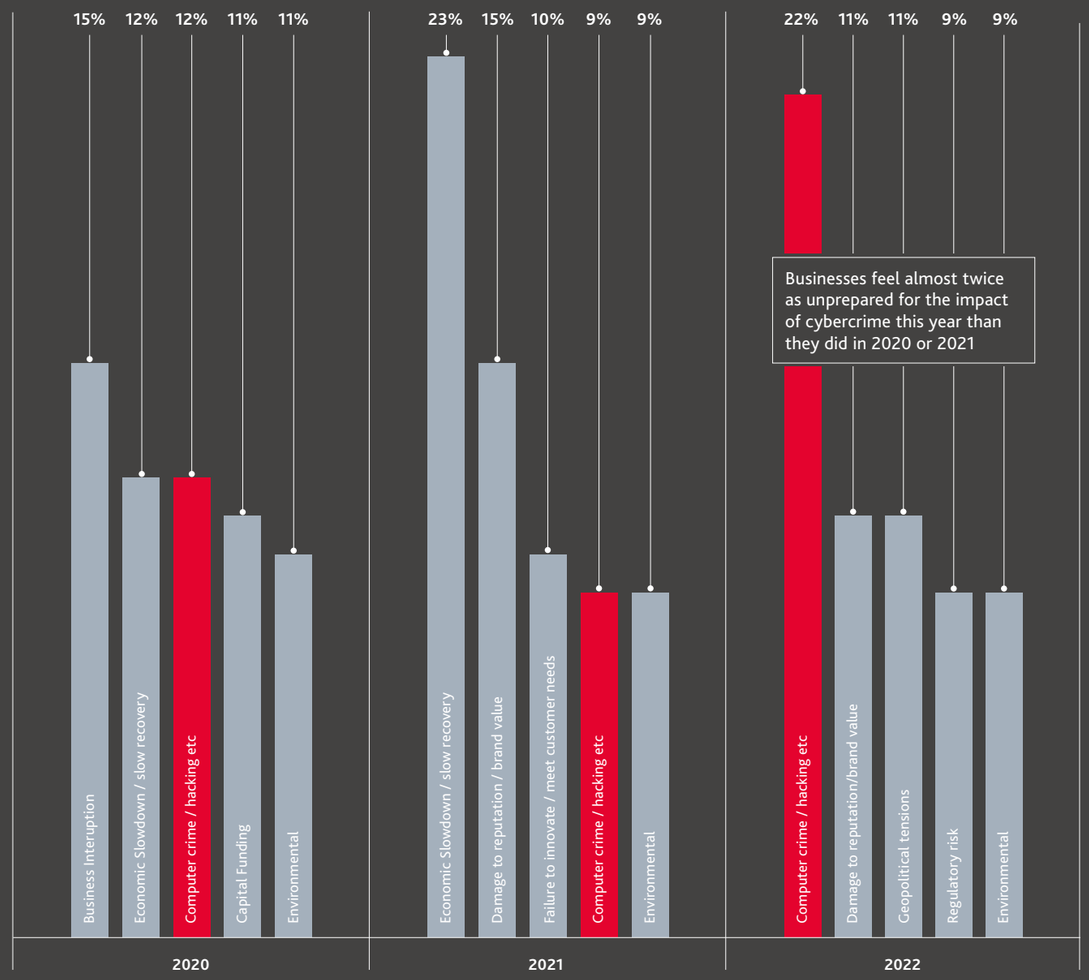
of companies have invested in digital supply chain technology over the last 18 months?



51%

of respondents said their business had ramped up cybersecurity in response to the War in Ukraine

Businesses are feeling much more unprepared for cybercrime than in previous years



THE GATHERING STORM

Businesses cannot afford to be complacent about the challenges that climate change and extreme weather events will present to supply chains across the globe

Despite the COVID-19 pandemic highlighting crisis-related supply chain management issues, our survey indicates a lack of preparedness for future pressures. In particular, it revealed that many organisations are not putting plans and processes in place to minimise the impact of climate disaster. The vast majority of regions and industries are likely to be caught out in the event of forthcoming climate change-related events, with financial and reputational repercussions.

Natural and climate disasters that are expected to affect supply chains in the coming years include rising coastal tides, extreme rainfall, floods, hurricanes, wildfires, and regional droughts. These extreme weather events make the risk of climate disaster-affected supply chains particularly critical for supply chains that cross international borders. Now is the time for all businesses to put plans and processes in place to mitigate this risk. It puts into sharp focus an important question: Is it now time to optimise supply chains more around resilience than efficiency?

Our survey results demonstrated the low priority many organisations place on climate change risk. Only 22 percent of respondents ranked climate change and natural disasters as a significant or highest priority for their business, which was the lowest score of any risk. The next lowest priority was tougher environmental regulations. Furthermore, just 23 percent of respondents believed that climate change and natural disasters would have a significant or severe impact on their business in five years time, again the lowest score of any risk.

While businesses are largely diligent about the risks to supply chains posed by cyber-attacks, mitigating climate-related risk is a blind spot for many C-suite leaders. While many businesses proved to be agile during the pandemic when lockdowns affected supply chains, it is unclear whether similar agility will be on display when climate events have a similar – or more serious – impact.

Ricky Cheng, Director and Head of Risk Advisory – BDO Hong Kong, cited failure to control the average temperature rise to less than 1.5° as a major concern for companies being unprepared for forthcoming challenges, along with potential economic downturn from global economic recession and future outbreaks of infectious diseases.

The Climate Change Committee, an independent UK statutory body that reports to parliament on progress made in preparing for and adapting to the impact of climate change, outlined how climate events can disrupt business operations. In particular, the committee highlighted how the level of disruption will depend on factors that businesses cannot necessarily control, such as the resilience of local infrastructure including energy, transportation and communications systems. As these services are frequently the responsibility of government bodies in many jurisdictions, the committee warns that businesses will "need to understand their exposure" to climate events and "not assume that authorities will manage risks on their behalf".

For organisations that rely on international supply chains, distribution networks and global markets, the committee highlighted the reality of risk exposure regarding extreme weather worldwide. This is especially prevalent for supply chains that include more vulnerable countries, such as those in south and south-east Asia and sub-Saharan Africa.

The importance of planning for the impact of climate disaster on supply chains cannot be overstated. However, there are steps that can be taken to ensure better preparedness. The European Corporate Governance Institute released a paper in August 2021 that outlined urgent measures for businesses.

Internationally diversified companies will likely have the financial power to make supply change adaptations that remove vulnerable countries from supply chains, the paper found. This is a similar approach to that which was taken in response to events such as Russia's War in Ukraine, US-China trade tensions, and China's zero-COVID strategy. However, taking this step means that international economic development will be affected in vulnerable countries, leaving them economically weaker.

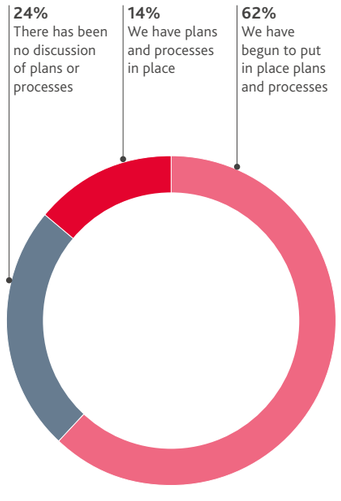
A 2020 Hanken School of Economics report found that businesses can learn lessons in preparedness from humanitarian agency supply chains, which showed remarkable resilience and agility during the COVID-19 pandemic. The report found that corporate and humanitarian supply chains both benefit from "the concepts of agility, flexibility, responsiveness and resilience" for managing turbulent conditions, such as extreme climate events.

Specifically, the Hanken report highlighted the importance of moving away from depending on low-inventory, just-in-time supply chains and recommended carrying safety stocks pre-positioned in strategic locations to avoid shortages. In corporate terms, the report concluded that this system "mitigates the effects of panic-buying and of price surges in the immediate aftermath of a disaster". Other recommendations included joint procurement to increase purchasing power during crises, localising supply chains wherever possible, not relying on single suppliers, and managing inventory to favour suppliers with shorter lead times.

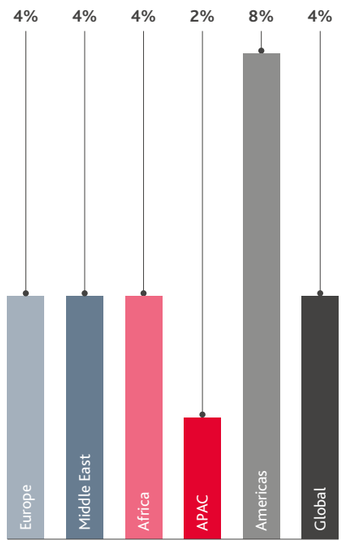
Forecasting is also essential, the report found, and not just in terms of accurately predicting the need for goods – the "integration of climate and weather forecasts with the activation of procurement, the mobilisation of supplies and funds and the deployment of people" is crucial. In short, companies that ignore the real risks of climate change will do so at their peril and, without preparedness and adaptation, the outcome for supply chains could be devastating.

Richard Walker provided a timely reminder about the implications of ESG disclosure requirements for supply chain managers across the globe: "After many years of greenwashing arguments, new disclosure requirements – especially the double materiality principle – ensure disclosure of information for investors and stakeholders, which brings suppliers and supply chains out of the shadows and into the sustainable, long-term value creation limelight."

Preparing for the impact of climate change on supply chains



Priority of climate change as a risk



Only

22%

ranked climate change and natural disasters as a significant or high priority

Only

23%

said it would have a significant or severe impact in 5 years time

CONCLUSION

Businesses that have taken a proactive approach to building supply chain resiliency, with a focus on sustainability, will be in a strong position to weather future storms in the years ahead

"Plan for 'unacceptable events'... and assess supply chain risks in terms of dependency, quality, environmental and social impact, and your security of supply"

EMANUEL VAN ZANDVOORT, PARTNER, BDO NETHERLANDS

Our Global Risk survey revealed an interesting mix of supply chain concerns – and measures taken to mitigate the risks – across businesses and across regions. Perhaps unsurprisingly given the impact of Russia's War in Ukraine, as well as ongoing issues with the US and China, geopolitical tensions were cited by 77 percent of respondents as the most pressing challenge.

As economies reopen after the COVID-19 lockdowns, other supply chain challenges include tougher environmental regulations, lack of digital expertise, and the effects of climate change and natural disasters. The picture is one of complex and often overlapping challenges, but our survey results exposed some hard questions that organisations will need to ask themselves if they are serious about mitigating supply chain risks.

Although the pandemic meant businesses across the globe had to adapt and diversify supply chains, lessons from this unprecedented worldwide crisis are not always being applied to future risks. While the risk of cyber-attacks in supply chains was cited by 72 percent of respondents as a threat, there were significant regional discrepancies in the development of digital expertise. In the Middle East and the Americas, hiring digital talent and investing in supply chain technology were higher priorities than other regions – and the prioritisation of supply chain management is markedly higher in these two regions.

"Assess supply chain risks in terms of dependency, quality, environmental and social impact, security of supply," advised Emmanuel van Zandvoort.

He added that businesses should plan for "unacceptable events" by looking at alternative sourcing, qualifying alternative materials, reviewing contractual arrangements with customers when they cannot supply, shortening supply chains where possible, monitoring risk indicators, and creating buffers by shoring up inventories with "safety stock".

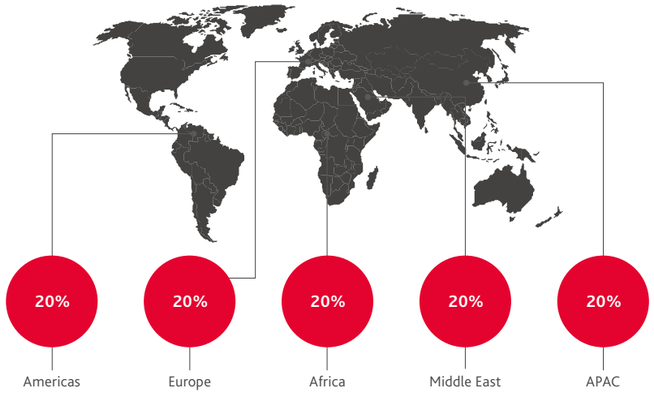
However, overall, our survey found a low proportion of businesses are concerned about the risk of climate disaster to supply chains (22 percent), correlating with a low proportion having plans and processes in place to mitigate climate change disruption (14 percent).

Ricky Cheng warned supply chain leaders that "climate-related data will be further scrutinised by global regulators [and] further requirements will be expected, such as mandatory assurance on ESG reporting and verification of carbon emissions data."

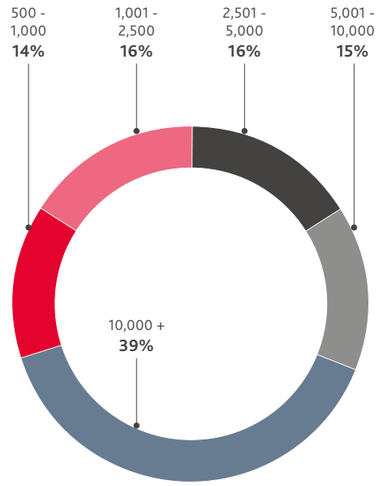
Strategies such as moving away from low-inventory, just-in-time supply chains; localisation where possible; joint procurement; and integrating climate and weather forecasting into predictive analytics make sense in the context of focusing more on resilience than efficiency when planning supply chains that can withstand extreme climate events. This has the potential to be the biggest challenge yet for supply chains, but the question remains as to whether businesses are prepared to make the plans and investments required to prevent another pandemic-level supply chain crisis.

DEMOGRAPHICS AND METHODOLOGY

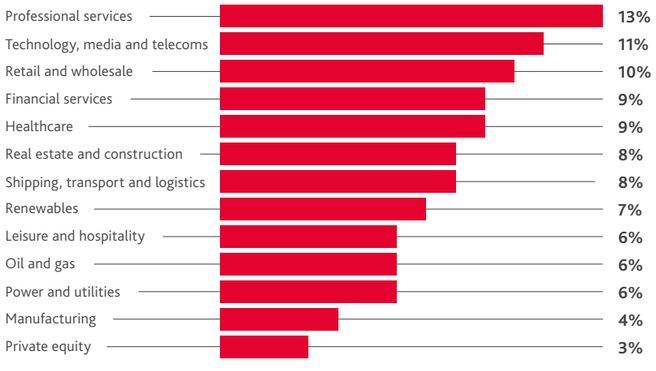
Company location



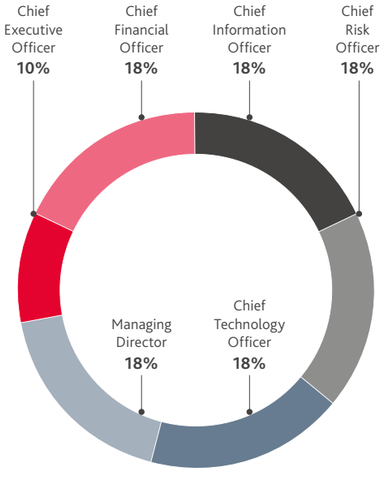
Number of employees



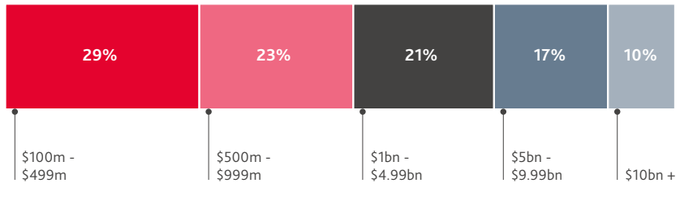
Organisation's primary industry



Job title or nearest equivalent



Annual Revenue



Numbers may not add up to 100% due to rounding